SID 63-1512

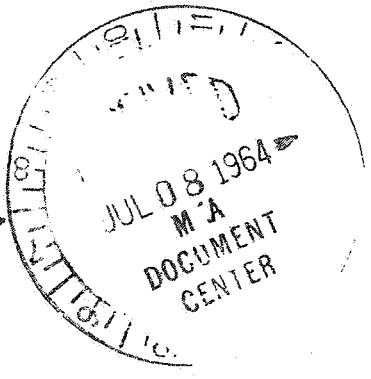
GSE END ITEM SPECIFICATION

FOR

CRADLE, TRANSPORT, LAUNCH ESCAPE SYSTEM

MODEL H14-083

(-101 Configuration)



[redacted]

NORTH AMERICAN AVIATION, INC.
SPACE and INFORMATION SYSTEMS DIVISION

63-15122

[redacted]

This reissue supersedes the 11 December 1963 issue of this specification.

SID 63-1512

GSE END ITEM SPECIFICATION

FOR

CRADLE, TRANSPORT, LAUNCH ESCAPE SYSTEM

MODEL H14-083

(-101 Configuration)

15 JANUARY 1964

NAS 9-150

Paragraph 4.2, Exhibit I.

[redacted]

NORTH AMERICAN AVIATION, INC.
SPACE and INFORMATION SYSTEMS DIVISION

TABLE OF CONTENTS

APPENDICES

GSE END ITEM SPECIFICATION

FOR

CRADLE, TRANSPORT, LAUNCH ESCAPE SYSTEM

MODEL H14-083

(-101 Configuration)

1. SCOPE

1.1 Scope. - This specification describes the general requirements for the Launch Escape System Transport Cradle, hereinafter referred to as the unit. The unit supports the LES in a horizontal position to facilitate handling and transportation with a minimum of distortion to the LES.

2. APPLICABLE DOCUMENTS

2.1 Applicability. - The following documents form a part of this specification to the extent specified herein. When the requirements of this specification and the documents referenced herein are in conflict, the requirements of this specification shall govern.

2.1.1 Government Documents.

STANDARDS

MIL-STD-130B	Identification Marking of U.S. Military Property

SPECIFICATIONS

MIL-D-70327(2)	Drawings, Engineering, and Associated Lists

2.1.2 Non-Government Documents*

North American Aviation, Inc.
Space and Information Systems Division (NAA/S&ID)

SPECIFICATIONS

SID 62-239 26 April 1963	General Requirements for the Design of Packaging for Shipment of Apollo GSE, and Training Equipment

DRAWINGS

G14-000024	Finish Specification - Apollo Ground Support Equipment
G15-810069-101	Cradle Transport LES

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*NOTE: See Appendices B through D for additional applicable NAA/S&ID documents.

3. REQUIREMENTS

3.1 Materials, Parts, and Processes.

3.1.1 Materials. - Materials shall be of a high commercial quality, free of all defects and imperfections that could affect the safety of personnel, serviceability, or functional capability of the equipment. The use of critical materials shall be held to a minimum.

3.1.2 Parts. - MS, AN, or MIL standard parts identified by their respective part numbers shall be used wherever practicable. Commercial utility parts such as screws, bolts, nuts, cotter pins, etc., may be used provided they have suitable properties and are replaceable by MS, AN, or MIL part numbers referenced on the drawings and in the parts lists. In applications where there are no suitable MS, AN, or MIL parts, commercial parts may be used provided they conform to the requirements of this specification.

3.1.3 Processes. - Manufacturing processes shall be in accordance with approved NASA and NAA/S&ID standards and specifications, as applicable, and shall be referenced on applicable drawings produced for this item.

3.1.4 Interchangeability. - The end items shall be physically and functionally interchangeable. Part number changes shall be governed by the drawing number requirements referenced in Specification MIL-D-70327.

3.2 Functional Requirements. - The unit shall fulfill the functional requirements as stated on the Data Sheet contained in Appendix A.

3.3 Construction. - Construction shall conform to the requirements of Dwg. G16-810069-101. See Appendix B for list of applicable drawings. See Appendix D for list of applicable procurement specifications.

3.4 Finishes. - The material used in the construction of the unit shall be protected from deleterious climatic and environmental conditions in accordance with Drawing G14-000024.

3.5 Identification. - Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

3.6 Interface Requirements. - The unit interface features shall be as specified on the Data Sheet (reference Appendix A).

3.7 Workmanship. - Workmanship shall be adequate to assure satisfactory operation, reliability, and durability consistent with the requirements for service, life, environment, and application of the equipment.

4. QUALITY ASSURANCE PROVISIONS

4.1 General Quality Assurance Provisions. - The principal contractor (NAA/S&ID) shall be responsible for the performance of all inspection requirements as specified herein. Unless otherwise specified, the principal contractor may utilize his own or any other inspection facilities and services acceptable to the NASA. Inspection records shall be kept complete and available to the NASA as specified in the contract.

4.2 Acceptance Test. - Each unit shall be examined to determine conformance to this specification with respect to material, dimensions, construction, identification, marking, and quality of workmanship.

5. PREPARATION FOR DELIVERY

5.1 Preservation and Packaging. - Preservation and packaging shall be in accordance with Specification SID 62-239.

6. NOTES

6.1 Intended Use. - The unit is to be used in support of Project Apollo as specified on the Data Sheet (reference Appendix A).

6.2 Acceptance Data Package. - The acceptance data package for this unit shall consist of those documents called out in Para. 6.14 of Exhibit I of the Contract NAS 9-150 with the exception of the following:

(a) Description Manual
(b) Transportation and Handling Procedures
(c) Storage Procedures
(d) Checkout Procedures (Operational Test Procedures)
(e) Documents Required by paragraphs 14.2 and 15.2 of NPC 200-2.
(f) Test Procedures

APPENDIX A

DATA SHEETS

1. Scope. - The following data sheets contain descriptive and functional data applicable to this item:

H14-083 (G15-810069-101) dated 20 September 1963

Pages A-2 through A-4

NOV 25 1963

Prepared By: E. Lilian	NORTH AMERICAN AVIATION, INC. SPACE and INFORMATION SYSTEMS DIVISION	Model No. H14-083
		62 TO 695-332-1 Report No.
Date: 9-20-63	APOLLO GSE DATA SHEET	Rev. / Date / Page No. 1 of 3

NOMENCLATURE: CRADLE - TRANSPORT L.E.S.

QUANTITY REQD.	MAKE OR BUY	TOP ASSY. DWG. NO.	PROCUREMENT SPEC. NO.
	MAKE	G15-810069-101	

BOILERPLATES AND/OR AIRFRAMES SUPPORTED
B/P 6. 12. 13. 15. 16. 18. 22. 23. 26. 27 AFRM 2. 6. 9. 10. 11

SPACECRAFT SYSTEM SUPPORTED Launch Escape System

UTILIZATION

SITES	AREAS	FIRST USAGE DATE
Downey WSMR AMR	Bldg 1 Interim Area Hazardous Assy Bldg Wt. and Balance Fac.	1-15-63

DESIGN DATA

FUNCTIONAL ANALYSIS OF [illegible] TO BE SUPPORTED AND/OR TESTED

A cradle is required to facilitate handling and transporting the L.E.S. The cradle should have pads and clamps, to support the L.E.S. horizontally, arranged to minimize distortion of the built-up components.

Lifting eyes should be provided to facilitate loading, and tie-down points should be incorporated in the cradle for transportation.

-101 differs from the basic in that its LE motor support pads are machined after welding operations are completed to remove any warpage.

Form 947-I Rev 12-62

Approvals

GSE Design Dept	GSE Interface (313)	Chief Engineer's Off. (500)
GSE Proj Engineer (330)	ATO GSE Test (042)	Proj Requirements (322)

Prepared By: J. Dees Date: 8-27-63	NORTH AMERICAN AVIATION, INC. SPACE and INFORMATION SYSTEMS DIVISION	Model No. H14-083 62 TO 695-322-1 Report No.
	APOLLO GSE DATA SHEET	Rev / Date / Page No. 2 of 3

RECOMMENDED SOLUTION OF REQUIREMENT:
(INCLUDE MODEL DESCRIPTION)

The cradle shall consist of a framework equipped with pads and straps to support the L. E. S. in a horizontal position.

Lifting eyes and tie-down fittings are provided to facilitate loading onto or unloading from the transportation vehicle and provide tie-down points during transportation.

The cradle must be designed to handle 7000 lbs with dolly transport capability.

Top Assy Dwg No. G15-810069-101

ENVIRONMENTAL CONDITIONS:

Outdoor use

SPECIFICATION REQUIREMENTS:

RELIABILITY REQUIREMENTS:

Form 947 H-1 Rev 12-62

GSE PROJECT ENG. (330)	CHIEF ENG. OFFICE (500)	PROJ REQUIREMENTS(322)

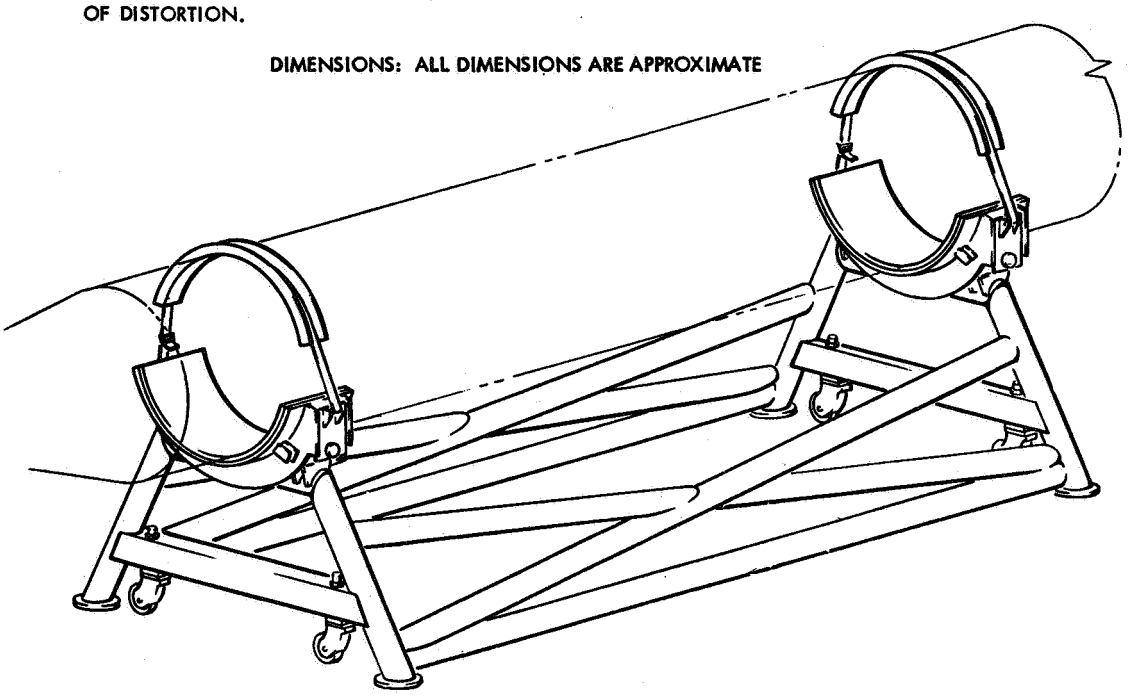
PREPARED BY: R. DOWNING	NORTH AMERICAN AVIATION, INC. SPACE and INFORMATION SYSTEMS DIVISION					MODEL NO. H14-083
REPORT NO. 62 TO 695-322-1	APOLLO GSE DATA SHEET					TOP ASSY DRAWING NO. G15-810069-101 .
CONTRACT NO. NAS9-150	ITEM NO.	EXHIBIT	DATE OF ORIGIN 8-21-63	REVISION	DATE REVISED	PAGE 3 OF 3

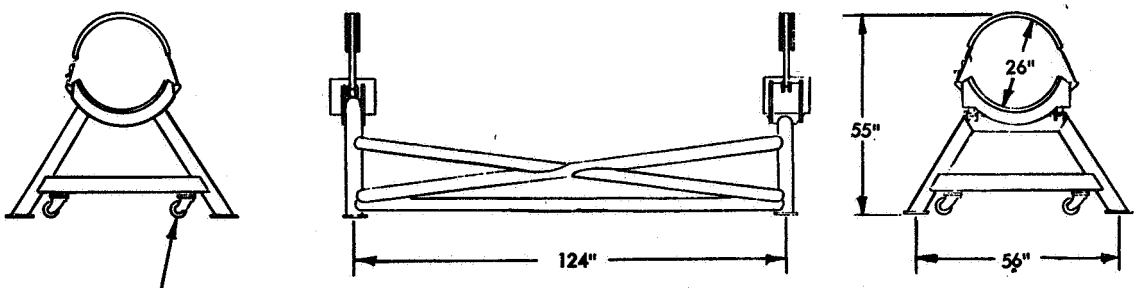
CRADLE - TRANSPORT LES

APPLICATION ATTACHMENT:
THE LES IS SUPPORTED BY THE CRADLE IN A HORIZONTAL POSITION AND HELD BY MEANS OF STRAPS.

FUNCTIONAL USAGE:
THE CRADLE SHALL SUPPORT THE LES IN A HORIZONTAL POSITION TO FACILITATE HANDLING AND TRANSPORTATION WITH A MINIMUM OF DISTORTION.

DIMENSIONS: ALL DIMENSIONS ARE APPROXIMATE





5" DIA. CASTER (FUNCTIONAL FOR CONVEYANCE OF FIXTURE WITHOUT LES)

FORM 647-N-2 REV 3-65

DRAWING NO. FIGAG15-810069-101		
GSE PROJECT ENG. (330) C.F. Lindner 9-25-63	CHIEF ENG. OFFICE (500) D. K. Bailey 9-25-63	PROJECT REQUIREMENTS (322) 9/25/63

APPENDIX B

LIST OF DRAWINGS

1. Scope. - The following list constitutes the assembly, installation, and schematic drawings for the equipment described in this specification.

Title	Number
Cradle Transport, LES	G15-810069-101
Stand - LES Support Assembly	G15-810064-51
Cradle Assembly - LES Support	G15-810068-21
Caster Assembly - LES Support	G15-810070
Bracket - LES Support Assembly	G15-810071
Strap Bridge Assembly - LES Support Assembly	G15-810072
Pin-Cradle, LES Support	G15-810073

APPENDIX C

LIST OF PROCESS SPECIFICATIONS

1. Scope. - The following list constitutes the specific process specifications for functional testing of this item.

NOTE: General manufacturing process specifications are referenced on individual drawings as specified in paragraph 3.1.3.

Title	Number
Not applicable. Functional testing of this item is not required.	

APPENDIX D

LIST OF PROCUREMENT SPECIFICATIONS

1. Scope. - The following constitutes a complete list of procurement specifications for non-standard equipment applicable to this equipment.

Title	Number
Not applicable. No non-standard equipment was procured for this item.	

ADDENDUM I TO SPECIFICATION SID 63-1512

Modification Kit

1 December 1965

Drawing G15-880003

[redacted]

1. SCOPE

1.1 Scope.- This addendum establishes the requirements for the Cradle Assembly - Transport, Launch Escape System (Mod Kit), a modification kit for Model H14-083 (-101 Configuration).

2. APPLICABLE DOCUMENTS

2.1 Applicability.- The following documents of the issue date specified, or if unspecified of the latest issue in effect, form a part of this addendum to the extent specified herein:

SPECIFICATIONS

North American Aviation, Inc., Space and Information Systems Division (NAA/S&ID)

SID 62-239 26 April 1963	General Requirements for the Design of Packaging for Shipment of Apollo

STANDARDS

Military

MIL-STD-130B 24 April 1962	Identification Marking of US Military Property

DRAWINGS

North American Aviation, Inc., Space and Information Systems Division (NAA/S&ID)

G15-880003	Cradle Assy - Transport, Launch Escape System (Mod Kit)

2.2 Precedence.- When the requirements of this addendum and those of the documents referenced herein are in conflict, the requirements of this addendum shall govern.

3. REQUIREMENTS

3.1 Performance.- The Cradle Assembly - Transport, Launch Escape System (Mod Kit), hereinafter referred to as the kit, shall modify Model H14-083 (-101 Configuration) to provide greater clearance between the aft cradle support and the aft end of the Launch Escape Motor (LES) when LES is resting in the cradle in a horizontal position. The added clearance shall permit installation of the LES structural skirt from the aft end of the motor after propellant grain inspection without removal of the motor from the grain inspection fixture. The kit shall include the necessary linkage for transporting the modified Model H14-083 (-101 Configuration) with or without the Sling-Spacecraft with Launch Ecsape System, Model H14-074.

3.2 Components.- The kit shall contain the components specified in Drawing G15-880003.

3.2.1 Installation.- Installation of the kit shall be in accordance with Drawing G15-880003.

3.2.2 Interchangeability and Replaceability.- The kit, its assemblies, parts, and components having the same part number shall be physically and functionally interchangeable. Replaceable parts and components shall require no more than minor processing (e.g., drilling, filing, reaming, cutting, shimming) to effect their replacement.

3.3 Identification.- Identification and marking of the kit shall be in accordance with Standard MIL-STD-130.

3.4 Effectivity.- The effectivity for the kit shall be as specified in Drawing G15-880003.

4. QUALITY ASSURANCE PROVISIONS

4.1 General Provisions.- NAA/S&ID shall establish a quality assurance program in accordance with the provisions of Contract NAS 9-150. Inspections and tests to determine conformance of the kit to contract and specifications requirements shall be conducted prior to submission of the kit to the NASA for acceptance. Documentation requirements shall be as noted in Exhibit I to Apollo Contract NAS 9-150.

4.2 Acceptance Test.- After installation of the kit, the modified Model H14-083 (-101 Configuration) shall be inspected to ensure conformance to the applicable drawings with respect to workmanship, finish, construction, dimensions, identification, and markings.

5. PREPARATION FOR DELIVERY

5.1 Shipment.- The kit shall be prepared for shipment in accordance with Specification SID 62-239.

6. NOTES (Not applicable)